

claims define features of the invention which are patentable over the prior art, Applicant respectfully requests notice of allowance.

I. Information Disclosure Statement

It is noted that the Examiner has not considered the installation and operating instructions brochure submitted with Applicant's Information Disclosure Statement because a date could not be found on the document. Applicant resubmits a form PTOL-1449 again listing this brochure and citing a publication date of April, 1992 which was inadvertently omitted from the previous submission.

II. Rejection of Claims 14-29 and 31-47 Under 35 U.S.C. § 112, Second Paragraph

The Examiner questions line 4 of claim 1 and states that he considers the back as being part of the chair and suggests that the line should read "a back secured to said seat." Applicant has made an amendment to line 4 of claim 1 such that claim 1 now recites that the back is part of the chair and is secured proximate one edge of the seat. This amendment has also been made to claims 14, 21, 27 and 30. Applicant respectfully requests reconsideration in view of this amendment and further requests that Applicant not be required to recite that the back is connected directly to the seat. In this regard, although the language chosen by Applicant would cover such a connection, it is meant to also cover the situation in which the back is not directly connected to the seat but is connected to some other mounting structure of the chair.

The Examiner questions claim 4 in regard to the origin of the signals recited therein. The Examiner further states that the last seven



lines of claim 4 are not understood and that claim 10 is similarly not understood. Claims 4 and 10 and all of the remaining claims which have similar language have been amended in an attempt to alleviate the concerns of the Examiner with respect to the origin of the signals. In this regard, however, Applicant submits that claims 4 and 10, as well as other claims in this application, clearly recited (as originally filed) the signals as provided by the "control". It should be noted that, as originally filed, claim 4 and claim 10 recited that "said control selectively provides alternative first and second output signals". In claim 1, the "control" is recited to include a "switch plate operatively connected to a microprocessor". Applicant therefore submits that the Examiner's concerns about the origins of the signals are unfounded. In an effort to alleviate any perceived confusion, Applicant has amended claims 4, 10 and other claims containing similar references to signals by reciting that the microprocessor selectively provides the first and second or, as now claimed, the maintained and momentary output signals. Reconsideration of this rejection is respectfully requested.

Regarding the Examiner's notation of a lack of antecedent basis for "said power lift mechanism" and "said power recline mechanism" in line 8 of claim 14 and also in claims 21, 27 and 30, Applicant has amended these claims to eliminate this lack of antecedent basis.

With respect to lines 14-21 of claim 14, the Examiner states that the description of a signal is not understood. The Examiner further

asks "is this meant to describe a 'pulse'?" The Examiner states that this signal description is fragmented and not understood and that claims 21, 31 and 44 also contain similar language. Applicant would first submit that the language used in claims 14 and 31 actually is analogous to the language used in claims 4 and 10 which have been treated above. Claims 14 and 31 have been amended in a similar fashion to claims 4 and 10 in regard to the alternative momentary and maintained output signals. Claims 4, 10, 14 and 31 all pertain to the feature of the present invention whereby a single switch on the seat back may be selectively programmed, through the microprocessor, to act as either a momentary switch or a maintaining switch. Thus, for example, a "back recline" switch may be programmed such that depression of the switch by the operator causes the back to recline for only as long as the switch is depressed or, in other words, such that the switch acts in a "momentary" fashion. Alternatively, when the switch is programmed to act as a maintaining switch, the operator may depress the switch and immediately release the switch and the back will recline until, for example, a limit switch is tripped by the moving chair. The concepts of "momentary" or "maintaining" signals thus do not concern a "pulse" but instead relate to the features just described.

Claims 21 and 44 concern an "auto up" feature whereby a single switch, which is preferably the "back recline" switch 60 or 60a, may be programmed to act solely as the back recline switch or, alternatively, as a maintained "auto up" switch in which depression of

the switch will cause the chair to be raised and reclined to a raised, operative position. It is respectfully submitted that claims 21 and 44 were clearly directed to this feature as originally filed. As amended, the claims should be even more clear in their meaning to the Examiner and reconsideration and withdrawal of this rejection is therefore respectfully requested.

The Examiner stated further that claim 17 was not understood because it was not understood how a signal could be turned "ON". Applicant has amended this claim as well as all of the other affected claims to recite that the signal is "set to an ON state" or "set to an OFF state" to alleviate the Examiner's concerns in this regard in the manner agreed to in the telephone interview of July 25. The Examiner further states that there is no antecedent basis for "said one switch" in claim 17. Applicant has amended claim 17 to replace "one of said switches" with "a predetermined switch" and to also replace "said one switch" with "said predetermined switch". Withdrawal of the rejections in these regards is therefore requested.

On page 3 of the Office Action, the Examiner questions what "entering a set-up mode" means. Also, the Examiner states that there is no antecedent basis for "said one switch". Applicant has amended claim 33 such that the first step recited therein states: "entering a set-up mode of operation which disables said microprocessor from producing said first and second output signals upon actuation of any one

of said plurality of switches". Thus, Applicant would submit each of these objections has been obviated by amendment.

The Examiner questions lines 6-9 of claim 35 in terms of their intended meaning. Claim 35 has been amended in order to clarify its meaning by now reciting: "exiting said set-up mode of operation after activating a desired one of said first and second output signals such that actuation of said selected switch causes said microprocessor to set one of said first and second output signals to an ON state". It is respectfully submitted that this amendment sufficiently clarifies the intended meaning of claim 35.

The Examiner suggests, with respect to claim 41, that the step of "detecting the activation of said disable mode" might be interpreted as redundant. Although this step is performed by the microprocessor, Applicant has deleted the step of "detecting the actuation of said combination of predetermined switches" as well as the step of "turning off all of said output signals in response to detecting actuation of said combination of predetermined switches" such that claim 41 recites a simpler, patentable set of method steps concerning Applicant's method of disabling the operation of a powered adjustable chair.

Claim 48 has been added as a dependent claim of claim 41 in order to further recite the step of "setting all of said output signals to an OFF state in response to actuation of said first combination of

switches". In essence, the result of this step is that chair movement will stop if the disable mode is activated during such chair movement.

Applicant respectfully submits that all claims comply with the requirements of 35 USC § 112, second paragraph, and that all of the claimed subject matter should be fully understandable by the Examiner in view of these amendments and in view of the remarks to be made concerning the five main features of the invention which are presented by these claims.

III. The Objections and Rejections Under 35 USC § 112, First Paragraph

The Examiner has objected to the specification as failing to provide adequate written description of the invention. While it is believed that the various questions raised by the Examiner were fully addressed in the telephone interview of July 25, Applicant provides the following response to the various issues raised by the Examiner in these sections of the Office Action.

With regard to the recitation of two distinct and separate power supplies, as originally filed, Fig. 5 shows these as "V_{HI}" and "V_{LO}". Applicant submits herewith a new drawing sheet showing Fig. 5 with "V_{HI}" and "V_{LO}" being replaced by blocks 125 and 99 which represent the high voltage power supply and the low voltage power supply. While Applicant submits that the "V_{HI}" and "V_{LO}" symbols adequately represented high and low voltage power supplies, Applicant has provided these amendments to the drawings and corresponding amendments to the specification in an effort to alleviate the confusion of the Examiner.

Regarding the Examiner's question concerning which input switch is being referred to on line 14 of page 24, Applicant notes that in the previous sentence the respective input switches are delineated as 58, 60, 62, 64, 58a, 60a, 62a, 64a wherein the switches without the "a" suffix are input switches on one switch plate 50 and the switches with the "a" suffix are switches on the opposite switch plate 50a. In an effort to alleviate the Examiner's confusion, Applicant has again inserted "58, 50, 60, 62, 64, 58a, 60a, 62a or 64a" in the next sentence on line 14 of page 24.

Regarding the Examiner's question as to what a "maintained output signal" is, as described throughout the specification, and specifically as described, for example, in lines 12-16 of this same page 24 of the specification, a maintained output signal is simply a signal which is turned ON or set to an "ON" state in response to closure of the switch contacts and which is maintained in the ON state independent of the subsequent opening of the switch contacts, i.e., independent of the operator taking their finger off of the switch. The signal which is turned ON or "set to an ON state" energizes the powered motion mechanism to cause the selected chair movement.

The Examiner then questions when the "alternative" in line 19 of page 24 occurs. This alternative occurs when the operator deems it desirable to cause it to occur. That is, when the operator wants to program a particular switch or switches 58, 60, 62, 64, 58a, 60a, 62a, 64a on one of the membrane switch plates 50, 50a to act as a

"momentary" switch or switches, he may program any selected switch or switches to do so. Alternatively, if he wants one or more of these switches to act as a maintaining switch or switches, he may program them to act in a maintaining fashion instead.

With regard to the Examiner's question concerning the "set-up switch", the set-up switch preferably comprises a predetermined combination of switches, e.g., stop switch 66 and auto switch 68 which activate the "set-up mode" when depressed. This is described, for example, at lines 15-21 of page 23. As described beginning at the top of page 25, when the set-up mode has been activated, the various input switches 58, 58a, 60, 60a, 62, 62a, 64, 64a may be "toggled" or switched in function between momentary and maintaining switches. Thus, when in the set-up mode, and as stated in lines 8-13 of page 25: "If any of these switches has been actuated to register an active state, the process at step 424 switches the current output signal status bit defining one of the types of output signals to the opposite state. For example, if the current state of the output signal status bit is set to produce a maintained output signal, the status bit is switched so that a momentary output signal will be produced and vice versa." In lay man's terms, these two sentences are simply stating that, when in the set-up mode, if one of the above-mentioned input switches is depressed then its function will be switched from momentary to maintaining or vice versa. Thus, when in the set-up mode, an operator can selectively choose what type of signal each switch will cause to be set to an "ON state" by the

microprocessor when the switch is subsequently depressed after exiting the "set up" mode.

Also, as described beginning at the top of page 26, when the set-up mode is activated, the auto switches 68, 68a may be used to activate and deactivate a switch beep option. Again, in lay man's terms, when the control is in the set-up mode, depression of an auto switch 68 or 68a will toggle the switch beep option OFF and ON. When ON, the switch beep option causes a beep or short tone to be generated by a tone generator 104 in response to every input switch contact closure. This provides a sensory perceptible signal to the operator that the control recognized a switch contact closure, or in other words, that the operator depressed an input switch. When the switch beep option is OFF, no beep on sound is produced when a switch is depressed.

It is respectfully submitted that in view of the foregoing remarks, while the specification of this invention may be somewhat complicated, it fully complies with the requirements of 35 USC § 112, first paragraph. Applicant therefore respectfully requests withdrawal of the objection and rejections under the first paragraph of § 112.

IV. The Invention

For the purposes of briefly providing the Examiner with a clear understanding of the five main features of this invention, Applicant provides the following summary thereof and likewise provides correspondence between each of these main features and the claims pertaining thereto.

A. The High and Low Voltage Power Supplies and Membrane Switches

Claims 1-13 are drawn to the combination of providing: (1) dual power supplies, that is, one low voltage power supply for powering the seat back switch plates 50, 50a and the control system of the invention and a high voltage power supply for powering the reclining and lifting actuators of the chair and (2) providing tactile-feel membrane switches on an outside surface of the seat back. As shown best in Figs. 3 and 4, each side edge 14a and 14b of the seat back 14 preferably includes a membrane switch plate 50 and 50a comprising a plurality of low voltage tactile-feel membrane switches. Unlike prior art devices, these membrane switch plates advantageously present a low voltage and more sterile environment for both the operator and the patient as well as providing a safer environment for assemblers and maintenance personnel. The flat membrane switches also virtually eliminate the possibility of accidental actuation by inadvertent contact with the operator during a medical procedure since they require very direct pressure to be applied on the flat surface of the switch plate for actuation. The flat surface of the switch plate is also much easier to maintain in a sterile condition than the push-button and rocker switch assemblies of past chair designs.

B. The Programmable Momentary/Maintaining Input Switches

The "raise seat", "lower seat", "raise back" and "recline back" input switches of each switch plate are each separately programmable to act as momentary or maintaining switches. When

acting as a momentary switch, the switch will act when depressed to move the chair with the predetermined movement corresponding to the selected switch until the switch is released by the operator. When this same switch is alternatively programmed to act as a "maintaining" switch, however, depression of this same switch and an immediate release thereof will cause the seat to make this same predetermined movement until a limit switch is tripped. Claims 4, 10, 14 and 31 are specifically directed to this feature.

C. The Programmable Auto Up Switch

One of the switches, which is preferably the "recline back" switch, may be programmed not only between momentary and maintaining type operation within the "recline back" function but also between the "recline back" function and an "auto up" function. In the "auto up" mode or function, this "recline back" switch will activate a raising and reclining movement of the chair. The switch acts in a maintaining fashion to activate this raising and reclining movement. Thus, when in the auto up mode, the "recline back" may be depressed and immediately released and the chair will continue raising and reclining until stopped by limit switches. The auto-up mode is preferably activated by pressing a combination of switches. In the preferred embodiment, this combination of switches comprises holding in one of the stop switches 66 or 66a and depressing one of the "recline back" switches 60 or 60a as described in the specification on 16-21 of page 26. To deactivate the auto up mode, the same combination of switches is again depressed.

When the auto up mode is deactivated, the "recline back" switch reverts to its function of reclining the back of the chair and, as such, it functions as either a momentary or maintaining switch depending on whether it was programmed as momentary or maintaining when the auto up mode was entered. Claims 5, 6, 17, 21 and 44 are specifically directed to this feature.

D. The Beep-On Switch Feature

As described at the top of page 26 in the specification, the AUTO switches 68, 68a are used in the set up mode to "toggle" or, in other words, selectively activate and deactivate a "switch beep" option. This essentially allows the operator to tailor the chair to his or her needs and/or preferences in having or not having a tone or "beep" generated each time a switch is depressed. This feature is claimed in claim 30.

E. The Switch Disable Feature

As described, for example, on page 22 of the specification, a disable mode may be programmed into the control system of the chair such that, with power maintained to the control system and chair, none of the input switches are operative to cause chair movement. The disable mode is preferably activated by simply holding down one of the stop switches 66 or 66a and depressing one of the lower seat switches 64, 64a. If the switches are operative and the disable mode is entered by depressing switches 66 and 64, for example, all output signals are turned OFF and the microprocessor will essentially ignore any switch closures which would otherwise produce a motion or motions of the

chair. If the switches are inoperative because the control system is already in the disable mode, then depression of this same combination of switches 66 and 64 will cause the disable mode to be exited and the input switches to be operative to cause chair movement again. This feature is specifically claimed in claims 11-13, 18-20, 24-26, 27-29 and 41-43.

V. Rejections Under 35 U.S.C. § 102 and § 103

The Examiner has rejected claim 30 under 35 U.S.C. § 102(e) as being clearly anticipated by the Gonser patent, No. 5,214,360. Applicant respectfully submits that while Gonser does disclose a powered adjustable chair having a tone generator which emits a sound when certain chair movements occur or when, for example button 23 is depressed, Gonser does not disclose any means for selectively programming the buttons or switches to emit an audible tone when depressed. That is, in Gonser's chair a tone is emitted each time button 23 is depressed. There is no teaching or suggestion that the control system may be programmed according to the needs of the operator to either emit a tone or not emit a tone when a switch is depressed. The feature of the present invention which is claimed in claim 30 is a "beep on switch operative to selectively activate and deactivate said beep on control circuit". As Gonser teaches no switch or combination of switches which allows the beep on feature to be selectively activated and deactivated, it is respectfully submitted that this rejection should be withdrawn.

The Examiner rejected claims 14-29 and 31-47 under 35 U.S.C. § 103 as being unpatentable over Taylor et al. '324 in view of Takeda et al. '252. This rejection was apparently made by the Examiner due to the misconception that the inventive features recited in these claims involve "pulse feeding" a motor. With the above amendments and remarks, it is anticipated that the Examiner will now realize that the invention does not concern "pulse feeding the motor" but instead concerns a powered adjustable chair incorporating the five main features discussed above. Three of the five features enumerated above, and various claimed combinations thereof are represented by pending claims 14-29, 31-44 and 46-48. It should be readily ascertained by the Examiner that neither the Taylor et al. patent nor the Takeda et al. patent teach or suggest: 1) the alternative momentary and maintained output signals provided by a microprocessor to a single switch as claimed in independent claim 14 and corresponding independent method claim 31; 2) the means for selectively activating and deactivating an "auto up" mode as claimed in independent claim 21 and corresponding independent method claim 44; and, 3) "a control circuit responsive to an actuation of a disable switch and operative to selectively disable said plurality of switches from directing movement of said chair while power is maintained to said control" as claimed in independent claim 27 and as similarly claimed in the corresponding independent method claim 41. In light of the complete lack of any teaching or suggestion of any of these claimed features by either the Taylor or Takeda patents, Applicant

respectfully requests withdrawal of this rejection and allowance of these claims.

Finally, the Examiner rejected claims 1-13 as being unpatentable over Taylor et al. '324 in view of Takeda et al. '252 and further in view of Benjamin et al. '186. The comments made with respect to the Taylor and Takeda patents above also apply here as respects all claims directed to subject matter discussed above. In addition, the Examiner brings in the Benjamin patent as allegedly teaching membrane switches in the same working environment. Claim 1, however, requires that a plurality of flat tactile-feel membrane switches are disposed on an outer surface of the seat back. Benjamin's vehicle seat clearly uses a lever 60 and yoke 52 to cause switch actuation. Benjamin does not teach flat membrane switches on the outer surface of a seat back as claimed in claim 1. For at least this reason, the rejection should be withdrawn. Also, the provision of high and low voltage power supplies in combination with the flat membrane switches disposed on the outer surface of the seat back and connected to the low voltage power supply is not taught by the combination of references. For this reason as well, claims 1-13 are allowable.

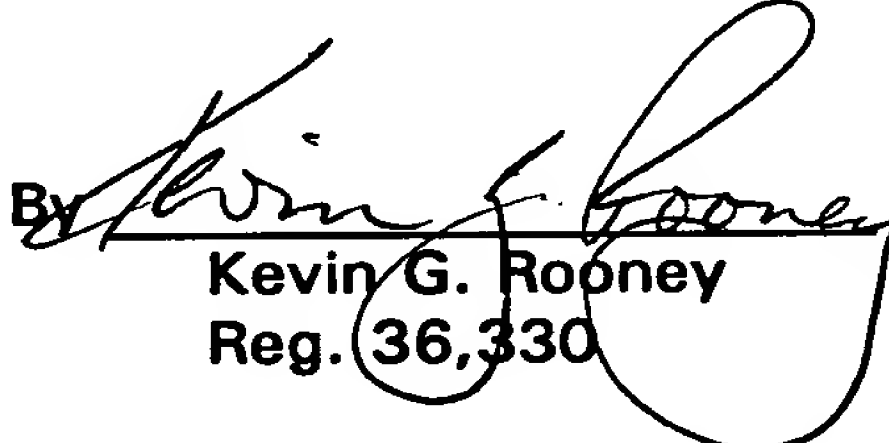
VI. Conclusion

In view of the foregoing response including the amendments and remarks, this application is submitted to be in complete condition for

allowance and early notice to this effect is earnestly solicited. If there is any issue that remains which may be resolved by telephone conference, the Examiner is invited to contact the undersigned in order to resolve the same and expedite the allowance of this application.

Respectfully submitted,

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